Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-6. (Canceled)

7. (Previously Presented) A composition of matter comprising:

a support which comprises an inspectible surface;

a plurality of oligonucleotides provided on said surface,

wherein at least one oligonucleotide of said plurality of oligonucleotides is bonded to a chemiluminescent dioxetane precursor, which precursor can be converted to a chemiluminescent dioxetane moiety which can be triggered to chemiluminesce.

8. (Previously Presented) The composition of matter of Claim 7, wherein said plurality of oligonucleotides includes nucleotides of different base sequences.

9. (Canceled)

10. (Withdrawn) The composition according to Claim 7, wherein said precursor is ~~a dioxetane precursor~~ selected from the group consisting of an enol ether and a phosphonate ester.

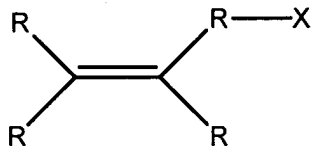
11. (Previously Presented) The composition according to Claim 7, wherein said oligonucleotide is bonded to said precursor either directly or through a linker group.

12. (Withdrawn) The composition according to Claim 7, wherein said oligonucleotide is bonded to said precursor directly.

13. (Previously Presented) The composition according to Claim 7, wherein said oligonucleotide is bonded to said precursor through a linker group.

14. (Previously Presented) The composition according to Claim 7, wherein said oligonucleotide remains bonded to said chemiluminescent moiety after said precursor is converted to said chemiluminescent moiety.

15. (Withdrawn) The composition according to Claim 7, wherein said precursor has the formula (I):



(I)

wherein each R is independently a hydrogen or C_{1-20} group selected from the group consisting of alkyl, heteroalkyl, heteroaralkyl, cycloalkyl, aryl, heteroaryl, substituted aryl, hydroxyaryl, substituted hydroxyaryl, acyloxyaryl, substituted acyloxyaryl, aralkyl, aryloxy, silyloxyaryl, substituted silyloxyaryl, aminoaryl, substituted aminoaryl, sulfonamidoaryl, and substituted sulfonamidoaryl,

wherein any two of said R groups may be joined together to form one or more rings,

wherein X is selected from the group consisting of a direct bond to said oligonucleotide, and a linking group bonded to said oligonucleotide.

16. (Withdrawn) The composition according to Claim 15, wherein X is a linking C_{1-11} alkyl group, which is optionally substituted, and which optionally comprises at least

one heteroatom, and wherein said X is attached to the -R- group in the formula with a carbon-carbon bond or a carbon-heteroatom bond.

17. (Withdrawn) The composition according to Claim 15, wherein X is a linking C_{1-6} alkyl group, which is optionally substituted, and which optionally comprises at least one heteroatom, and wherein said X is attached to the -R- group in the formula with a carbon-carbon bond or a carbon-heteroatom bond.

18. (Withdrawn) The composition according to Claim 15, wherein at least one R group has the formula -OY, wherein Y is aryl, alkyl, aralkyl, and cycloalkyl.

19. (Withdrawn) The composition according to Claim 15, wherein each R group has an allylic carbon bonded to the double bond in formula (I), and wherein none of the R groups have a proton bonded to the allylic carbon.

20. (Previously Presented) A composition of matter comprising:

a support which comprises an inspectible surface;

a plurality of oligonucleotides provided on said surface,

wherein at least one oligonucleotide of said plurality of oligonucleotides is bonded to a chemiluminescent dioxetane precursor, which precursor can be converted to a chemiluminescent dioxetane moiety which can be triggered to chemiluminesce,

wherein said chemiluminescent dioxetane moiety comprises a protective group which, if removed, induces decomposition of said chemiluminescent moiety to produce chemiluminescence.

21. (Previously Presented) The composition according to Claim 7, wherein said chemiluminescent moiety is bonded to said oligonucleotide either directly or through a linking group.

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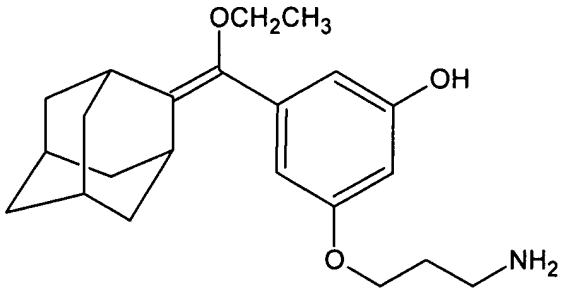
23. (Previously Presented) The composition according to Claim 7, wherein said chemiluminescent moiety is bonded to said oligonucleotide through a linking group.

24. (Previously Presented) The composition according to Claim 7, further comprising at least one sensitizing dye.

25. (Previously Presented) The composition of Claim 7, wherein the chemiluminescent dioxetane precursor has the following structure:



26. (Previously Presented) The composition of Claim 7, wherein the chemiluminescent dioxetane precursor can be converted to a chemiluminescent dioxetane moiety via oxidation.

27. (New) A method of detecting the presence of a nucleic acid of predetermined sequence in a sample, comprising exposing the composition of matter of Claim 7 to said sample under conditions which promote the hybridization of said nucleic acid of predetermined sequence to at least one of said oligonucleotides, and inspecting said

surface after any hybridization event may have occurred, where hybridization is indicated by release of chemiluminescence from the support.

28. (New) The composition according to Claim 7, wherein the chemiluminescent moiety is bonded to the oligonucleotide directly.